Integrating Screencasts into Workplace Training

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Abstract: With the hundreds of unique tasks involved in entering data into the University of Hawaii Student Information System (SIS), there are issues with inaccurate data and improper training. Integrated appropriately, screencasts can help authorized staff learn the correct procedures for entering data into the SIS. This paper reports on a small instructional design study where a group of authorized staff were shown how to perform three unique tasks from three different screencasts. Evidence from this study indicates that screencasts aided the participants in understanding what the correct procedures were for entering data into the SIS. Furthermore, based on qualitative feedback, a majority of the participants view screencasts as a useful tool for training staff on various SIS tasks. Integrating screencasts into a training program, especially when it is task-oriented, may increase the quality of instruction in any organization.

Introduction

Entering data into a database can be a daunting task. The University of Hawaii currently uses Banner, a Student Information System (SIS) that embodies hundreds of unique tasks requiring distinct steps, screens, and functions to be completed. The SIS is a comprehensive information system that contains information on courses, students, faculty, staff, and alumni. There are over 10,000 users including students who access the SIS.

Many of the staff who uses the system have not been trained properly. Available training materials consists only of screenshot documents linked to the SIS's training wiki, a website developed collaboratively by the community of SIS users. Clerks, in particular, still have difficulty performing the intricate tasks despite being already trained. In addition, student workers frequently have to enter data into the SIS. The turnover is high enough for these positions and training schedules are not currently set up to handle the training needs of new employees. Additionally, the level and consistency in training varies between trainees. Logistics make it difficult to conduct face-to-face training sessions throughout a University system that has 10 campuses, distributed over four islands, with a limited staff of subject matter experts (SMEs).

The above description leads to both inaccurate data entry and numerous calls to the help desk. Essentially, SIS mistakes consume a lot of money and time. Hence, the purpose of this instructional design project is to develop and evaluate a web-based module using

screencasts to train University of Hawaii authorized users on the correct procedures for entering data into the SIS.

Background

Liu, Chiang, and Huang (2007) acknowledged that while web-based training is unlikely to replace traditional training completely, it offers significant opportunities for corporate training and continuing education such as a job promotion or higher pay. They found that learners receiving web-based training on the use of a software program achieve higher levels of learning effectiveness than their counterparts receiving traditional classroom instruction (Liu et al., 2007). Gardner and Jeon (2009) suggested that by incorporating screencasts with web-based instruction and when the nature of instruction is application-oriented, a task-centered instructional strategy would be most appropriate for training.

Screencasts are digital recordings of the output from a computer monitor, including narration (Falconer, deGrazia, Medlin, & Holmberg, 2009). One of the primary features of an instructional screencast is the direct capture of screen activity and images continuously (Sugar, Brown, & Luterbach, 2010). The instructional uses of screencasts range from lecture capture, such as a narrated PowerPoint presentation, to more involved demonstrations of problem-solving, online techniques, or computer-based processes. Examples of this would be demonstrating how to navigate through a database, use a particular website, or utilize specific software, like Excel. A study by Falconer et al. (2009) concluded that screencasts used in an educational setting were effective supplements to active learning techniques, they are relatively inexpensive to create, production time is minimal, have various uses, and student feedback was overwhelmingly positive. Another study by Peterson (2007) demonstrated positive feedback from their students. The study suggested that screencasts should be considered as an additional tool for learners across other disciplines, particularly when using databases that have layered sets of information, requiring multiple mouse clicks (Peterson, 2007).

There are many advantages of screencasting. Sugar et al. (2010) points out that the learner experience is enhanced through screencasts and the convenience of being able to watch a screencast at any place and time is a definite advantage. They also explain that use of screencasts has a positive effect on learning because they provide multiple input channels by presenting an expert performing and describing a task (Sugar et al., 2010). As Yee and Hargis (2010) discussed, "chunking" screencasts into shorter, more digestible presentations has multiple benefits. Some of the benefits include a more narrowed focus, an increased likelihood that students will find the time to view the videos, and an increased ability of the student to encode concepts and process the material efficiently from working memory into long term memory (Yee and Hargis, 2010).

Methods

Before developing content for the online instructional module, the researcher met with SMEs, the official SIS trainers, to obtain a better understanding of what instructional materials were already available to the SIS users. In addition to documents with

screenshots, there were the occasional face-to-face training sessions and a wiki training page. Initial assessments concluded that there was very little training material available to the users less of which involved the use of current technology tools.

The intended target audience in this study was authorized users to the SIS from the University of Hawaii system. Specifically, users who had been working at the University for less than one year and performed similar functions in the SIS would have been the ideal group. In addition, the users should not have received any formal training on the SIS and had not been previously exposed to any kind of screencast training.

Module development

Since entering data into the SIS is very task-oriented, it was ideal to design the instructional module with a task-centered instructional strategy. Merrill (2002) recommends five steps for designing problem- or task-centered instruction which include:

1. Identify the task or problem that learners will be expected to do or solve;
2. Identify a progression of increasingly difficult and complex tasks or problems;
3. Identify the knowledge and skills required to complete the task or problem;
4. Determine the instructional strategy for helping learners acquire the necessary knowledge and skills to complete the task or problem; and
5. Develop the instruction and incorporate it into the delivery system.

Based on Merrill's recommendations, the researcher gathered input from the SMEs to identify the tasks that the participants were expected to learn from the screencasts. The tasks that were chosen for screencasts demonstration included: 1) creating a student record, 2) changing a name and address, and 3) changing a major. Each screencast represented a task in the SIS that had been identified by the SMEs as tasks with which the staff consistently had problems. All three tasks took 3 to 5 minutes to perform. This length of time was typical for the tasks normally performed in the SIS. In addition, the duration of the screencasts was large enough to be meaningful, yet small enough to maintain the attention of and be useful to the participants. There was a progression beginning with easy to difficult from the first to the last screencast.

In order to complete the tasks, the researcher identified the required skills to accomplish them: basic knowledge of SIS navigation, understanding of the general person records, and familiarity with the student records. The task-centered instructional strategy was used to create the screencasts and the instructional module. Three screencasts were created with Camtasia, a screencasting software. The instructional design module, the online environment where the participants would access the screencasts, was created with Weebly, an online website creator.

The module went through two iterations of revisions. The first revisions of the module reflected feedback from classmates and an advisor. Based on the feedback, changes to the website consisted of formatting and navigation issues. The researcher resized the frame that quizzes and surveys were in so that the users did not have to scroll down to the

bottom of the page to click on the "Next" button. In addition, the font size and color of the feedback pages were changed and some open-ended questions in the surveys were switched from required to optional.

The second revisions of the module were modified based on feedback from the one-on-one group consisting of three SMEs. The feedback from the one-on-one's exposed issues related to the content of the screencasts. Thus, all three screencasts went through two full revisions. The major revision included shortening the length of the screencasts by removing content related to SIS form explanation. The SMEs pointed out that the users are more interested in learning how to perform a particular task than understanding why they are performing it. Lastly, the researcher eliminated the need for the users to click multiple times on a webpage to move to the next part of the module. Both groups were very useful in creating a good balance of form and function for the online module.

Evaluation procedures and instruments

Several instrumentation methods were used to evaluate the effectiveness of the instructional design module. All surveys and tests were created in Google Docs, an online word processor tool that allows collection of information by form creation. Data was collected through an anonymous online module consisting of a demographic survey, attitudinal survey, and pre- and post-tests. In addition, embedded questions were included after each screencast to allow the participants to practice what they learned. Both the demographic survey and attitudinal questionnaire consisted of Likert scale, open-ended, and multiple-choice questions. The pre- and post-test consisted of thirteen multiple-choice questions. The embedded questions were very similar to the pre- and post-test questions.

Quantitative data for this study was collected using the pre-, embedded, and post-test. The comparison between the pre- and post-test demonstrated whether the screencasts instruction was effective to facilitate information retention. Qualitative data was collected from the attitudinal survey that assessed perceived learning and motivation. The attitudinal survey also asked participants to rate the usefulness of the screencasts and to provide their opinions on what did or did not work.

Results

Sample demographic

A total of 26 participants completed the study. From this group, two were male and the 24 were females. Ages ranged from 19 to 64 with the average age being 41 years old. Forty four percent of the participants had a Masters or Bachelors degree while the rest had either an Associate degree or was a high school graduate.

Based on the Likert scale from the demographic survey, 68% of the participants were familiar with the SIS and 76% worked daily with the SIS. In terms of training, only 56% of the participants had training on the SIS and 80% never received training with

screencasts on the SIS. What was interesting was that screencasts training for the SIS had never been offered from the University. Therefore, it was peculiar whether the 20% who did say they received screencasts training on the SIS did not understand the question or received screencasts training of another SIS at a different school. Assuredly, 92% of the participants were interested in learning more about the correct procedures for entering data into the SIS.

Pre- and post-tests data

Overall, there was an increase of 29% in the average score from pre- to post-test. *Figure 1* illustrates the results from the pre- and post-test by question. The participants' scores increased for all questions except for question four. *Figure 2* shows the particular pre- and post-test question. The decrease in average score for question four may have been because the question or answers between the pre- and post-test was not similar enough. Surprisingly, the participants who answered this question incorrectly in the post-test responded with the correct answer in the embedded quiz. The three people who answered incorrectly for question four in the post-test all selected "All of the above" as the answer, which is the same answer for the pre-test. Consequently, participants may have just copied what they did in the pre-test.

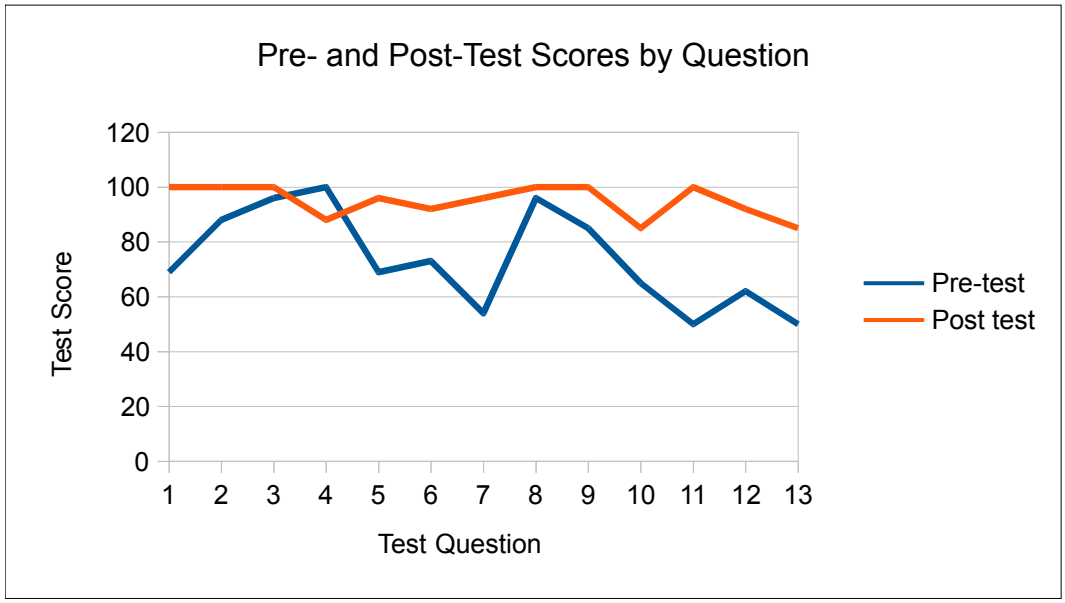

Figure 1. Pre- and Post-Test Results by Question

Pre-test question 4: What other functions can you do with the main person form?	Post-test question 4: Aside from entering name, what else can be done in the main person form?
• Enter telephone • Enter address • Enter biographical information • All of the above*	• Add curriculum • Add telephone number* • Add registration • All of the above

Figure 2. Question Four from Pre- and Post-Test
(Asterisk indicates the correct answer)

On the contrary, as illustrated in *Figure 1*, questions 7, 11, and 13 displayed an increase in score of at least 70%. This may also mean that the questions or answers were not similar enough or that the participants truly did learn from the module.

Figure 3 shows some interesting anomalies. The participants who improved by at least 83% were people who had worked with the SIS for at least 8 to 9 years. It may possibly have been that they took a lax approach with the module and completed it only because they were directed to. What was promising was that the true target population, people who worked less than a year with the SIS, improved in their scores.

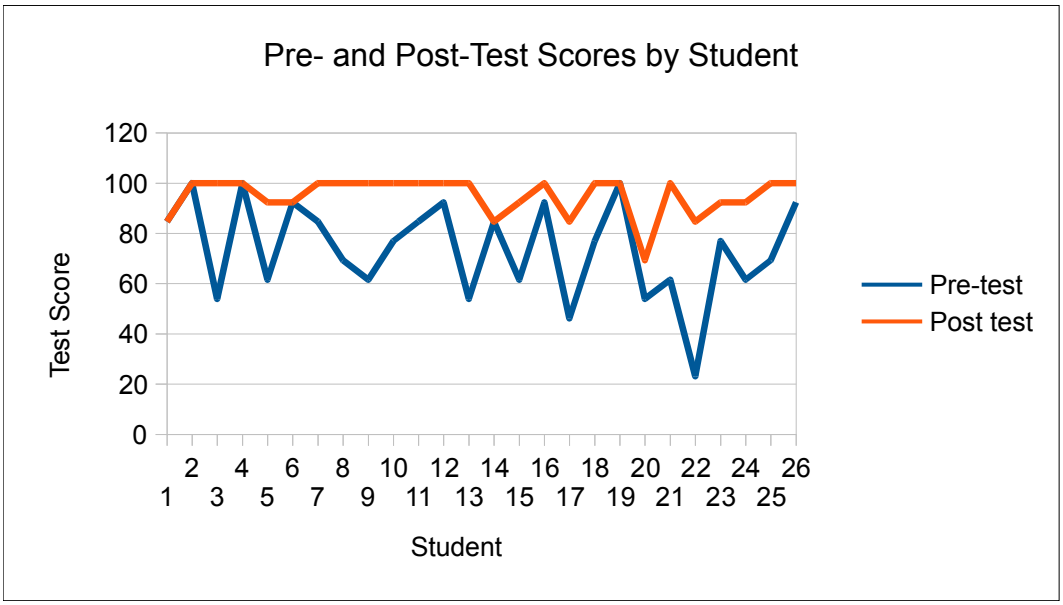

Figure 3. Pre- and Post-Test Results by Student

Evaluation of effectiveness of screencasts integration

Considering the number of years of experience the participants had with using the SIS, it was encouraging to learn that many still felt the screencasts were very helpful. *Table 1* exhibits the Likert scale results from the attitudinal survey. In addition to the positive results, the participants "*liked the idea of being able to pause and rewind (busy office with interruptions)"* and *"having the step-by-step visual and audio"*. One participant

mentioned that *"actually seeing the screen on what to do made it really helpful to understand"* and another participant thought that the *"step-by-step demonstrations were easy to follow along with the instructions, after doing the pop quizzes and post test, it was helpful to have the correct answers."*

Table 1. Attitudinal Survey – Likert Scale

Attitudinal Survey (Likert Scale Questions 1-10)	**Average Score (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)**
1. I'm interested in learning more about the correct procedures for entering data in Banner.	4.5
2. I understand the correct procedures for entering data in Banner.	4.3
3. The module helped me understand the correct procedures for entering data in Banner.	4.5
4. The module will help me to follow the correct procedures for entering data in Banner in the future.	4.4
5. The module flowed in a logical manner.	4.7
6. The module had clear instructions.	4.7
7. The length of this module was manageable.	4.6
8. The length of the screencasts was manageable.	4.5
9. The graphics in the module were helpful.	4.6
10. This module was useful to me.	4.3

The participants did mention that certain aspects of the module could be improved, mostly within the screencasts itself. A participant said, *"I can imagine that for a beginner the instructions would still be hard to follow, partially because there are so many little things about the SIS that are difficult (like figuring out how to 'next block'), I was confused during the module for updating a student's major, particularly during the part about clicking the different buttons."* Another participant mentioned that *"maybe it* [the module] *should give an example for us to complete, give us info on a bogus person to create a file."*

In general, 67% of participants gave the module a letter grade of A and the rest gave it a letter grade of B. There were many comments about how this method of training is excellent for people who simply do not have time to sit-in on "live" training sessions. A few of the participants commented that using screencasts is definitely needed to ensure consistency among users of the SIS.

Implications and Discussion

This is the first round of this mode of training for the SIS. Based on the comments received from the attitudinal survey, this type of training may be useful for more complex

and difficult tasks. It may not be necessary to show each supporting skill or tasks on a screencast. For example, there may not be a need for the first two screencasts. The first two tasks could simply have been explained in a document with screenshots. Also, more classification of the participants' knowledge level and skill sets must be considered when choosing which tasks are compatible with the use of screencasts. Furthermore, it would be useful to have an additional learning aid, such as a document to supplement the screencasts used in training.

An interesting item to note, initially, 34 participants began the module. Many of the participants stopped the module when they realized sound was required to learn from the screencasts. The assumption was that they took the module at work on their desktop computers, which became an issue because they did not have sound. In addition, a few of the participants jumped around throughout the module that about halfway through implementation, the links to different parts of the module were disabled and participants were forced to follow the navigation buttons at the bottom of each page. As expected, after that change, all of the participants completed all parts of the module.

A few of the participants inquired about being able to “practice” after watching the screencasts. Following this study, the screencasts will be placed in the training wiki and the SMEs will add more complex screencasts in the future. The users will be able to navigate from the wiki to the training SIS and practice what they previously learned from the screencasts.

Screencast training will be an effective tool for future, upgraded versions of the SIS, which will include a complete overhaul of the interface. The users of the SIS will need to acquire new skills to use the SIS. While it may be practical to have face-to-face training for this, screencasts are an effective tool for those who cannot attend the face-to-face training. In addition, screencasts can be used for other portions of the SIS, such as the online portal where students can register, pay their tuition, check their grades and more. Faculty also have access to this online portal to enter grades, check their class roster, and enter course overrides. It is fundamental for students and faculty to learn how to complete any of the specific tasks related to the online portal.

Conclusion

Screencasting has become a popular technique for imparting high-quality knowledge at a low cost. As the SIS trainers, the SMEs realize how much resources are consumed with the mistakes that are made to the SIS and recognize that screencasts are an ideal and feasible solution for the University of Hawaii campuses. The information from screencasts is immediate, convenient, and consistent. The results from this study can be applied to other institutions wishing to incorporate screencasts into their training program, especially when it is task-oriented. What will be interesting to see is how this technology may be coupled with other tools to enhance the quality of instruction in an organization.

References

Falconer, J. L., deGrazia, J., Medlin, J. W., & Holmberg, M. P. (2009). Using screencasts in ChE courses. *Chemical Engineering Education*, *43*(4), 302-305.

Gardner, J., & Jeon, T. (2009). Creating task-centered instruction for web-based instruction: Obstacles and solutions. *Journal of Educational Technology Systems*, *38*(1), 21-34.

Liu, C.-H., Chiang, T.-C., & Huang, Y.-M. (2007). Assessment of effectiveness of web-based training on demand. *Interactive Learning Environments*, *15*(3), 217-235.

Merrill, M. D. (2002). A pebble−in−the−pond model for instructional design. *Performance Improvement*, *41*(7), 41–46. doi:10.1002/pfi.4140410709

Peterson, E. (2007). Incorporating screencasts in online teaching. *International Review of Research in Open and Distance Learning*, *8*(3), 1-4.

Sugar, W., Brown, A., & Luterbach, K. (2010). Examining the anatomy of a screencast: Uncovering common elements and instructional strategies. *International Review of Research in Open and Distance Learning*, *11*(3), 1–20.

Yee, K., & Hargis, J. (2010). Screencasts. *Turkish Online Journal of Distance Education*, *11*(1), 9–12.